

Amendments to the Claims:

1. (Original) A non-contact method for determining a tension in a target strand, comprising the steps of:

providing a plurality of radiation detecting elements each arranged to provide an output signal for indicating a level of radiation incident at a respective detecting element;

detecting radiation incident at said plurality of detecting elements when said strand vibrates;

repeatedly identifying one or more detecting elements providing an output indicating a predetermined characteristic; and

determining the tension in said strand responsive to which of said detecting elements are identified.

2. (Original) The method as claimed in claim 1 further comprising the steps of:
providing a radiation source to illuminate a portion of said strand; and
detecting radiation reflected from said strand.

3. (Original) The method as claimed in claim 1 further comprising the steps of:
providing a radiation source to illuminate a portion of said strand; and
detecting radiation un-obscured by said strand.

4. (Currently Amended) The method as claimed in ~~any one of~~ claims 1 to 3 wherein said step of repeatedly identifying comprises the steps of:

detecting a level of incident radiation at all of said plurality of detecting elements;

identifying which of said detecting elements from all of said plurality of detecting elements, has the highest level of incident radiation; and

repeating the steps of detecting a level of incident radiation at all of said detecting elements and identifying said highest level of incident radiation detecting element over a period of time.

5. (Currently Amended) The method as claimed in ~~any one of claims 1 to 3~~ wherein said step of repeatedly identifying comprises the steps of:

detecting a level of incident radiation at all of said plurality of detecting elements;
identifying which of said detecting elements from all of said plurality of detecting elements has the lowest level of incident radiation; and
repeating the steps of detecting a level of incident radiation at all of said plurality of detecting elements and identifying said lowest level of incident radiation detecting element over a period of time.

6. (Currently Amended) The method as claimed in claim 4 ~~or 5~~ further comprising the steps of:

providing an output indicating the position of an identified detecting element over said period of time; and
determining a frequency associated with a change in position of said identified element.

7. (Original) The method as claimed in claim 6 further comprising the steps of:
calculating said tension according to the equation

$$T = \rho(2lf / n)^2$$

where T is the tension in the strand, ρ is the linear density of the strand, l is the distance between two points of the strand, f is the natural frequency of vibration and n is an integer value corresponding to the mode of vibration of the strand.

8. (Currently Amended) The method as claimed in ~~any one of claims 1 to 7~~ further comprising the steps of:

supporting said strand at two spaced-apart locations via a pair of guide supports.

9. (Original) The method as claimed in claim 8 further comprising the steps of:

generating a vibration of said strand by running said strand in a direction parallel to a main axis of the strand and across guide supports arranged substantially perpendicular to the direction of running.

10. (Original) A method as claimed in claim 8 further comprising the steps of:
generating a vibration of said strand by displacing a portion of said strand away from a resting position and permitting said strand to recover to the resting position.

11. (Currently Amended) The method as claimed in ~~any one of claims 2 or 3~~ further comprising locating said strand at a desired location with respect to said plurality of detecting elements prior to determining said tension.

12. (Original) The method as claimed in claim 11 further comprising the steps of:
providing two or more radiation sources and locating said strand at said desired location by the steps of:

locating said plurality of detector elements at various locations with respect to said strand;

detecting when an intensity of reflected or transmitted radiation reaches a predetermined level;

selecting a position for said plurality of detector elements when the intensity reaches said predetermined level; and

locating said plurality of detection elements at said selected position.

13. (Original) Apparatus for determining a tension in a strand comprising:
a plurality of radiation detection elements each for providing an output signal responsive to a respective level of incident radiation;

means for identifying one or more of said detecting elements providing a respective output indicating a predetermined characteristic; and

means for determining the tension in said strand responsive to which of said detecting elements is identified.

14. (Original) The apparatus as claimed in claim 13 further comprising:
a radiation source for illuminating a portion of said strand.

15. (Original) The apparatus as claimed in claim 13 further comprising:
a lens for focussing radiation onto said radiation detecting elements.

16. (Currently Amended) The apparatus as claimed in ~~any one of claims 13 to 15~~
wherein said means for identifying comprises:

a comparator arranged to consecutively compare the output from the plurality of detecting elements with a repeatedly updated previously stored value and provide an enable signal to indicate when a detecting element provides a respective output indicating said predetermined characteristic.

17. (Original) The apparatus as claimed in claim 16 further comprising:
a data store arranged to store the repeatedly updated value.

18. (Original) The apparatus as claimed in claim 17 further comprising:
a counter arranged to output a running digital count signal, each value of said count signal indicating a respective one of said detecting elements.

19. (Original) The apparatus as claimed in claim 18 further comprising:
a latch arranged to receive said count signal and said enable signal and to output a count value responsive to said enable signal.

20. (Currently Amended) The apparatus as claimed in ~~any one of claims 13 to 19~~
wherein said means for determining the tension comprises:

a frequency analyzer for receiving a signal indicating said one or more identified detecting elements and, from said signal, determining a frequency of vibration of said strand.

21. (Currently Amended) The apparatus as claimed in ~~any one of claims 13 to 20~~ wherein said strand comprises a tensioned yarn.

22. (Currently Amended) The apparatus as claimed in ~~any one of claims 13 to 20~~ wherein said strand comprises a textile yarn.

23. (Currently Amended) The apparatus as claimed in ~~any one of claims 13 to 20~~ wherein said strand comprises a running strand.

24. (Currently Amended) The apparatus as claimed in ~~any one of claims 13 to 23~~ wherein said plurality of radiation detecting elements comprises a charge coupled device (CCD) or photodiode type linear array.

25. (Currently Amended) The apparatus as claimed in ~~any one of claims 13 to 24~~ wherein said radiation source comprises one or more light emitting diodes.

26-27. (Canceled)